

WHAT IS CLAIMED IS:

1. For mitigating effects of hydrometeors presented at an instrument antenna system directly exposed to precipitation events, an apparatus acting adjacent to the system with sufficient force to cause movement of the hydrometeors relative to the system.

2. The apparatus of claim 1 wherein said apparatus includes a relatively high velocity blower mechanism.

3. The apparatus of claim 1 wherein the system includes a antenna window, said apparatus including a mechanism for inducing said movement of the hydrometeors either or both of before and after hydrometeor contact or formation at the window.

4. The apparatus of claim 3 wherein said apparatus further includes a hydrophobic material applied to the window.

5. The apparatus of claim 4 wherein said mechanism includes means for causing vibration at the window.

6. The apparatus of claim 1 further comprising a corrective model mechanism for further refining instrument performance in the presence of hydrometeors.

7. The apparatus of claim 6 wherein said model mechanism includes a retrieval method development stage, a retrieval method use stage, and a correction stage.

8. An apparatus for mitigating effects of hydrometeors presented at an instrument antenna window directly exposed to precipitation events, said apparatus comprising:

a relatively high velocity blower mechanism acting adjacent to the window with sufficient force to cause movement of the hydrometeors relative to the window either or both of before and after hydrometeor contact or formation at the window.

9. The apparatus of claim 8 further comprising a sensor for sensing the likelihood of hydrometeor presence at the window, said sensor and said blower mechanism operatively associated so that operation of said blower mechanism begins when likely hydrometeor presence at the window is sensed by said sensor.

10. The apparatus of claim 9 wherein said blower mechanism includes means for directing air flow tangentially across a detecting surface of said sensor.

11. The apparatus of claim 8 wherein the instrument window is a radome having both upper and lateral surfaces, said blower mechanism including a blower located adjacent to an air flow directing means for directing a relatively high velocity flow of air tangentially across both upper and lateral surfaces of the radome.

12. The apparatus of claim 11 further comprising a housing configured for securement to the instrument adjacent to the window and defining a duct of said directing means having an air inlet and air outlet on opposite sides of said blower.

13. The apparatus of claim 12 wherein said air inlet is vertically disposed opening downwardly during normal instrument use.

14. The apparatus of claim 11 wherein said air flow directing means includes an arcuate structure having a plurality of fins for promoting laminar air flow across the radome surfaces.

15. The apparatus of claim 8 wherein said blower mechanism includes a centrifugal fan.

16. The apparatus of claim 8 wherein said blower mechanism includes a blower and an air flow directing means for directing a relatively high velocity flow of air angularly away from a surface of the window.

17. The apparatus of claim 8 further comprising a vibration inducing mechanism one of attached or located adjacent to the window.

18. The apparatus of claim 8 further comprising a hydrophobic material applied to the window.

19. A method for mitigating effects of hydrometeors presented at an instrument antenna system directly exposed to precipitation events comprising the steps of:

sensing hydrometeor presence at the system indicating a precipitation event; and

responsive thereto, employing at least one mechanism for reliably refining instrument output during the precipitation event.

20. The method of claim 18 wherein said mechanism includes at least one of a mechanism for inducing movement of the hydrometeors either or both of before hydrometeor contact at the system and after hydrometeor contact or formation at the system, a mechanism for causing vibration at a part of the system, and a corrective model mechanism for refining instrument performance in the presence of hydrometeors.

21. The method of claim 20 wherein employment of said model mechanism includes the steps of developing a retrieval method, using said retrieval method to convert observables to meteorological parameters, estimating hydrometeor population from deviations noted thereby.